



**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ON**

**COURSE OUTLINE**

**COURSE TITLE:** College Preparatory Mathematics

**CODE NO:** MTH 92-5

**SEMESTER:** Two

**PROGRAM:** General Arts and Science

**AUTHOR:** JohnGiguere

**DATE:** June 1997

**PREVIOUS OUTLINE DATED:** June 1996

**APPROVED:**

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**TOTAL CREDITS:**

**PREREQUISITES:** MTH 097-5

**SUBSTITUTE(S):** MTH 099, MTH 113, MTH 120, MTH 111, MTH 153

**LENGTH OF COURSE:**

**TOTAL CREDIT HOURS:** 85

## I. COURSE DESCRIPTION:

The objectives of this course are to develop the student's skill in performing:

- a. basic algebraic operations
- b. graphical and algebraic solution of simultaneous linear equations
- c. solution of practical problems involving the application of linear equations in one and two variables

Emphasis on the overall importance of the Pythagorean Theorem and its applications will be stressed.

A survey of geometry will enable the student to identify a variety of basic plane and solid figures encountered and to determine their perimeters, areas and volumes appropriately in both British and metric units.

An introduction will be made to trigonometry and its application in the solution of the right triangle.

## II. STUDENT PERFORMANCE OBJECTIVES:

The basic objectives are that the student develop an understanding of the methods studied, demonstrate a knowledge of the facts presented and show an ability to use these in the solution of problems. To accomplish these objectives, exercises are assigned. Test questions will be of near equal difficulty to questions assigned in the exercises. The level of competency demanded is the level required to obtain an overall passing average on the tests. The material to be covered is listed below.

## III. TOPICS TO BE COVERED:

### Approximate Time Frame

1. The Language of Algebra	9 hours
2. Signed Numbers	9 hours
3. Equations and Inequalities	9 hours
4. Polynomials	9 hours
5. Factoring	9 hours
6. Algebraic Fractions	9 hours
7. Graphing Linear Equations	9 hours
8. Systems of Linear Equations	9 hours
9. Trigonometry of the Right Triangle	14 hours

**IV. LEARNING ACTIVITIES:**

<b>TOPIC NUMBER</b>	<b>TOPIC DESCRIPTION</b>	<b>REFERENCE CHAPTER ASSIGNMENTS</b>
<b>1.0</b>	<b>THE LANGUAGE OF ALGEBRA</b>	
<b>1.1</b>	<b>From Arithmetic to Algebra</b>	<b>Ex. 1-2 pages 9-12</b>
<b>1.2</b>	<b>Exponents and Order of Operations</b>	<b>Ex. 1-2 pages 19-22</b>
<b>1.3</b>	<b>The Properties of Addition and Multiplication</b>	<b>Ex. 1-3 pages 27-30</b>
<b>1.4</b>	<b>Adding and Subtracting Expressions</b>	<b>Ex. 1-4 pages 34-48</b>
<b>1.5</b>	<b>Multiplying and Dividing Algebraic Expressions</b>	<b>Ex. 1-5 pages 43-46</b>
<b>1.6</b>	<b>Evaluating Algebraic Expressions</b>	<b>Ex. 1-6 pages 49-52</b>
<b>2.0</b>	<b>SIGNED NUMBERS</b>	
<b>2.1</b>	<b>Signed Numbers an Introduction</b>	<b>Ex. 2-1 pages 67-70</b>
<b>2.2</b>	<b>Adding Signed Numbers</b>	<b>Ex. 2-2 pages 77-80</b>
<b>2.3</b>	<b>Subtracting Signed Numbers</b>	<b>Ex. 2-3 pages 85-90</b>
<b>2.4</b>	<b>Multiplying Signed Numbers</b>	<b>Ex. 2-4 pages 97-102</b>
<b>2.5</b>	<b>Dividing Signed Numbers</b>	<b>Ex. 2-5 pages 107-110</b>
<b>2.6</b>	<b>More on Evaluating Algebraic Expressions</b>	<b>Ex. 2-6 pages 115-118</b>
<b>3.0</b>	<b>EQUATIONS AND INEQUALITIES</b>	
<b>3.1</b>	<b>Equations, an Introduction</b>	<b>Ex. 3-1 pages 131-132</b>
<b>3.2</b>	<b>Solving Equations by Adding or Subtracting</b>	<b>Ex. 3-2 pages 139-142</b>
<b>3.3</b>	<b>Solving Equations by Multiplying or Dividing</b>	<b>Ex. 3-3 pages 149-152</b>
<b>3.4</b>	<b>Combining the Rules to Solve Equations</b>	<b>Ex. 3-4 pages 161-166</b>
<b>3.5</b>	<b>Solving Literal Equations</b>	<b>Ex. 3-5 pages 171-174</b>
<b>3.6</b>	<b>Inequalities, an Introduction</b>	<b>Ex. 3-6 pages 177-180</b>
<b>3.7</b>	<b>Solving Linear Equations</b>	<b>Ex. 3-7 pages 189-192</b>
<b>3.8</b>	<b>Applying Equations</b>	<b>Ex. 3-8 pages 201-204</b>
<b>4.0</b>	<b>POLYNOMIALS</b>	
<b>4.1</b>	<b>Polynomials</b>	<b>Ex. 4-1 pages 221-224</b>
<b>4.2</b>	<b>Adding and Subtracting Polynomials</b>	<b>Ex. 4-2 pages 231-236</b>
<b>4.3</b>	<b>Multiplying Polynomials</b>	<b>Ex. 4-3 pages 243-248</b>
<b>4.4</b>	<b>Special Products</b>	<b>Ex. 4-4 pages 253-256</b>
<b>4.5</b>	<b>Dividing Polynomials</b>	<b>Ex. 4-5 pages 263-266</b>
<b>4.6</b>	<b>More on Linear Equations</b>	<b>Ex. 4-6 pages 269-272</b>
<b>4.7</b>	<b>More Applications</b>	<b>Ex. 4-7 pages 281-284</b>
<b>5.0</b>	<b>FACTORING</b>	
<b>5.1</b>	<b>Factoring, an Introduction</b>	<b>Ex. 5-1 pages 301-304</b>
<b>5.2</b>	<b>The Difference of Squares</b>	<b>Ex. 5-2 pages 307-309</b>
<b>5.3</b>	<b>Factoring Trinomial - Part I</b>	<b>Ex. 5-3 pages 317-320</b>
<b>5.4</b>	<b>Factoring Trinomial - Part II</b>	<b>Ex. 5-4 pages 329-332</b>
<b>5.5</b>	<b>Solving Equations by Factoring</b>	<b>Ex. 5-5 pages 339-342</b>
<b>5.6</b>	<b>More Applications</b>	<b>Ex. 5-6 pages 347-350</b>

**IV. LEARNING ACTIVITIES (Continued):**

<b>TOPIC NUMBER</b>	<b>TOPIC DESCRIPTION</b>	<b>REFERENCE CHAPTER ASSIGNMENTS</b>
5.7	More on Literal Equations	Ex. 5-7 pages 355-357
5.8	Variation: Direct and Reverse	Ex. 5-8 pages 359-360
6.0	<b>ALGEBRAIC FRACTIONS</b>	
6.1	Algebraic Fractions, An Introduction	Ex. 6-1 pages 373-374
6.2	Writing Algebraic Fractions in Simplest Form	Ex. 6-2 pages 381-383
6.3	Multiplying and Dividing Algebraic Fractions	Ex. 6-3 pages 389-392
6.4	Adding and Subtracting Like Fractions	Ex. 6-4 pages 397-400
6.5	Adding and Subtracting Unlike Fractions	Ex. 6-5 pages 409-414
6.6	Complex Fractions	Ex. 6-6 pages 421-424
6.7	Equations Involving Fractions	Ex. 6-7 pages 431-434
6.8	More Applications	Ex. 6-8 pages 441-444
6.9	Ratio and Proportion	Ex. 6-9 pages 449-452
7.0	<b>GRAPHING LINEAR EQUATIONS AND INEQUALITIES</b>	
7.1	Solutions of Equations in Two Variables	Ex. 7-1 pages 475-478
7.2	The Rectangular Coordinate System	Ex. 7-2 pages 485-489
7.3	Graphing Linear Equations	Ex. 7-3 pages 505-516
7.4	The Slope of a Line	Ex. 7-4 pages 527-534
7.5	Graphing Linear Inequalities	Ex. 7-5 pages 541-548
8.0	<b>SYSTEMS OF LINEAR EQUATIONS</b>	
8.1	Systems of Linear Equations: Solving by Graphing	Ex. 8-1 pages 569-576
8.2	Systems of Linear Equations: Solving by Adding	Ex. 8-2 pages 585-588
8.3	Systems of Linear Equations: Solving by Substitution	Ex. 8-3 pages 595-598
8.4	Systems of Linear Equations: Applications	Ex. 8-4 pages 611-616
9.0	<b>THE TRIGONOMETRY OF THE RIGHT ANGLE</b>	
9.1	The Trigonometric Ratios	All the following exercises will be based on a set of handouts.
9.2	Values of the Trigonometric Ratios	
9.3	Right Triangle Applications	

## V. REQUIRED RESOURCES / TEXTS / MATERIALS:

1. Text: "Beginning Algebra", Third Edition, Form A, Streeter and Alexander.
2. Calculator SHARP Scientific Calculator EL-531G. The use of some kinds of calculators may be restricted during tests.

## VI. EVALUATION PROCESS/GRADING SYSTEM:

### MAJOR ASSIGNMENTS AND TESTS

While regular tests will normally be scheduled and announced beforehand, there may be an unannounced test on current work at any time. Such tests, at the discretion of the instructor, may be used for up to 30% of the overall mark.

At the discretion of the instructor, there may be a mid-term exam and there may be a final exam, each of which can contribute up to 30% of the overall mark.

The instructor will provide you with a list of test dates. Tests may be scheduled out of regular class time.

### ATTENDANCE

It is your responsibility to attend all classes during the semester. Research indicates there is a high correlation between attendance and student success.

If you are absent from class, it is your responsibility to find out from your instructor what work was covered and assigned and to complete this work before the next class. Your absence indicates your acceptance of this responsibility.

**Unexcused absence from a test may result in a mark of zero ("0").** Absence may be excused on compassionate grounds such as verified illness or bereavement. On return from an excused absence, you should ask your instructor to schedule the writing of a make-up test. Failure to do so will be considered as an unexcused absence.

**VI. EVALUATION PROCESS/GRADING SYSTEM (Continued):****METHOD OF ASSESSMENT (GRADING METHOD)**

A+	Consistently outstanding	(90% - 100%)
A	Outstanding Achievement	(80% - 89%)
B	Consistently above average achievement	(70% - 79%)
C	Satisfactory or acceptable achievement in all areas subject to assessment	(55% - 69%)
X or R	A temporary grade, limited to situations with extenuating circumstances, giving a student additional time to complete course requirements <b>(See below)</b>	(45% - 54%)
R	Repeat - The student has not achieved the objectives of the course, and the course must be repeated	(0% - 44%)
CR	Credit exemption	

The method of calculating your weighted average will be defined by your instructor. Since grades are based upon averages, it follows that good marks in some tests can compensate for a failing mark in another test.

**Make-Up Test (if applicable)**

An "X" grade may be assigned at the end of the regular semester if you have met ALL of the following criteria:

- an overall average between 45% and 54% was achieved
- at least 50% of the tests were passed
- at least 80% of the scheduled classes were attended
- all of the topic tests were written

If you are assigned an "X" grade, you may convert it to a "C" grade by writing a make-up test on topics agreed to by the instructor. This test will be available at the time agreed to by your instructor.

At the end of the regular term, it is your responsibility to obtain your results from your instructor and, in the event of an "X" grade, to inquire when the make-up test will be available.

The score you receive on this make-up test will replace your original test score and be used to re-calculate your weighted average. If the re-calculated average is 55% or greater, a "C" grade will be assigned. If the re-calculated average is 54% or less, an "R" grade will be assigned.

## VI. EVALUATION PROCESS/GRADING SYSTEM (Continued):

### "R" and "X" Grades at the end of the Semester

If an "X" grade is not cleared by the specified date, it will become an "R" grade. Except for extenuating circumstances, an "X" grade in Math will not be carried into the next semester.

### "R" Grades during the Semester

A student with a failing grade and poor attendance (less than 80% attendance) may be given an "R" at any time during the semester.

## VII. SPECIAL NOTES:

### Special Needs

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, learning disabilities), you are encouraged to discuss required accommodations with the instructor and/or contact the Special Needs Office, Room E1204, Ext. 493, 717,491 so that support services can be arranged for you.

### Advanced Standing

Students who have completed an equivalent post-secondary course must bring relevant documents to the Coordinator, Mathematics Department.

### Retention of Course Outlines

It is the responsibility of the student to retain all course outlines for possible future use in gaining advanced standing at other post-secondary institutions.

Substitute course information is available at the Registrar's office.

The instructor reserves the right to alter the course as he/she deems necessary to meet the needs of the students.

## VIII. PRIOR LEARNING ASSESSMENT:

There is a MTH 92 Challenge exam in place.

Students who wish to apply for advanced credit in the course should consult the instructor or the Prior Learning Assessment Office (E2203).